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2005

## CVN 21 Future Carriers

Dwyer, Dennis

Monterey, California: Naval Postgraduate School

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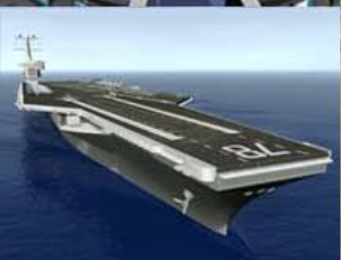
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# *Future Carrier Strike Groups*

**RADM Denny Dwyer**  
**PEO Aircraft Carriers**  
**17 February 2005**



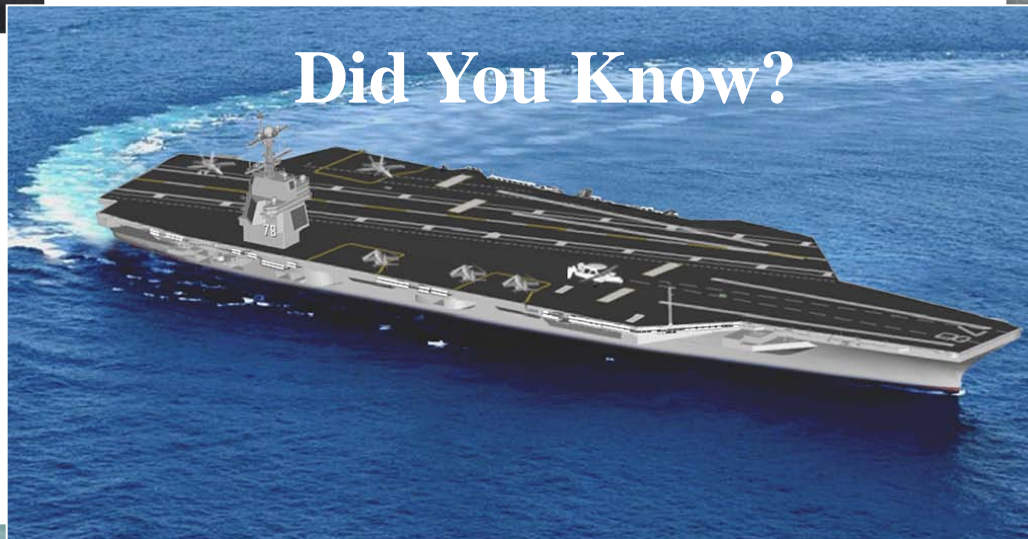


# *The Carrier Strike Group*

## *Imagine the Possibilities*

**To Protect American Interests Overseas  
You Want to Get There With**

**Speed, Agility, and Power**



**Did You Know?**

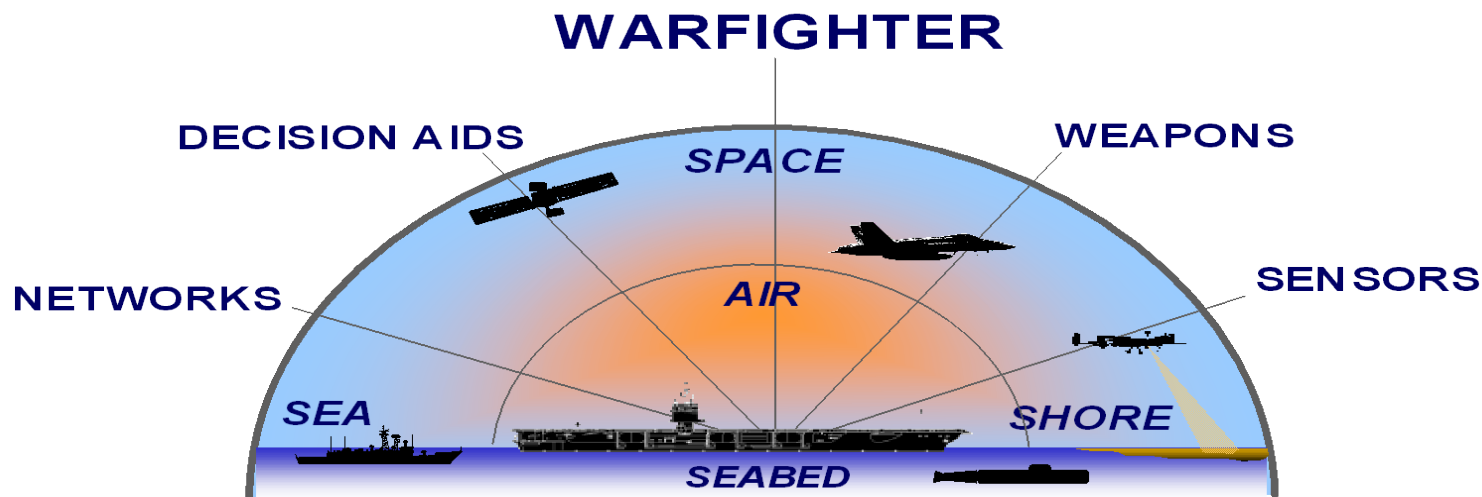
- Contains 4 Million Gallons of Jet Fuel
- Carries 3,000 Tons of Ordnance
- Represents 4.5 Acres of Sovereign U.S. Territory
- Produces 500,000 Gallons of Water per Day
- Operates Unmanned Aircraft

- Deployed U.S. Army forces During OEF
- Does Not Need Host Nation Approval to Operate
- Is the CSGs Information Hub
- Deploys Special Forces
- Conducts Strike Planning





# *The CSG in Naval Power 21*



## **Netted Forces / Mobility / Connectivity**

GIG  
Global Info  
Grid

CID  
Combat  
Identification

CAS  
Close Air Support  
Strike CAP

TGT SET  
Mobile, HDBT,  
Relocatable

**Sea Shield**

**Sea Strike**

**Sea Basing**

CVW ISR / EARLY WARNING  
PLATFORMS

CVW EMBEDDED  
COMBAT POWER

THE TACAIR SEABASE

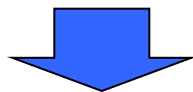
**COMBAT POWER EARLY**



# *The Future Carrier is the Information Hub at Sea*

## Mission Planning Cells

Local Sensors



Humanitarian  
Ops

Strike  
Ops

Logistics

Undersea  
Warfare

Land Force  
Support

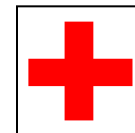
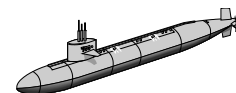
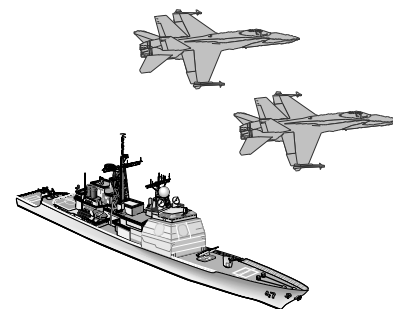
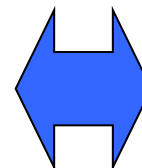
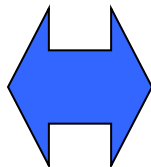
Self-Defense

The City

Mini  
JOC



Intel  
Logistics  
NCA



**Adapt to Future Missions**





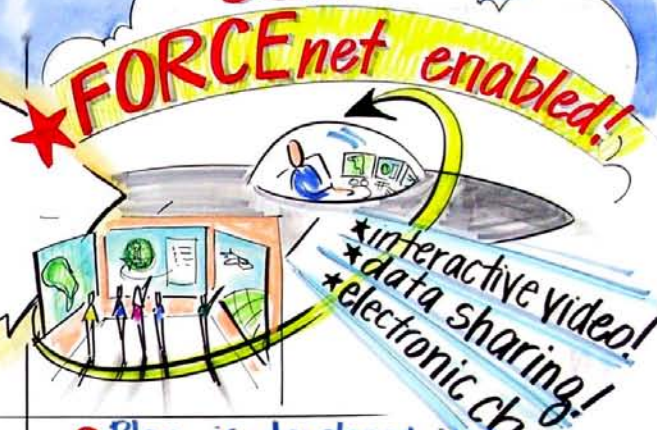
1991



2001



2021



## MISSION PLANNING- ATO

- PAPER & TEXT BASED
- Manually Intensive



- Although the product starts and ends life visually, all the immediate steps are not
- Plans based on sorties per target

- ELECTRONIC & TEXT BASED
- More AUTOMATED



- Product still starts and ends life, but immediate steps are essentially text-based
- Reduce SORTIES per TARGET

- Plan is developed in a collaborative, real-time, VISUAL ENVIRONMENT
- Operators can plan & execute more like we think!
- Quicker reaction times and shorter planning cycles
- Measured in Targets per Sortie

## DYNAMIC MISSION REPLANNING

- MISSION PLANS seldom change
- Voice communication to communicate changing requirements to pilot

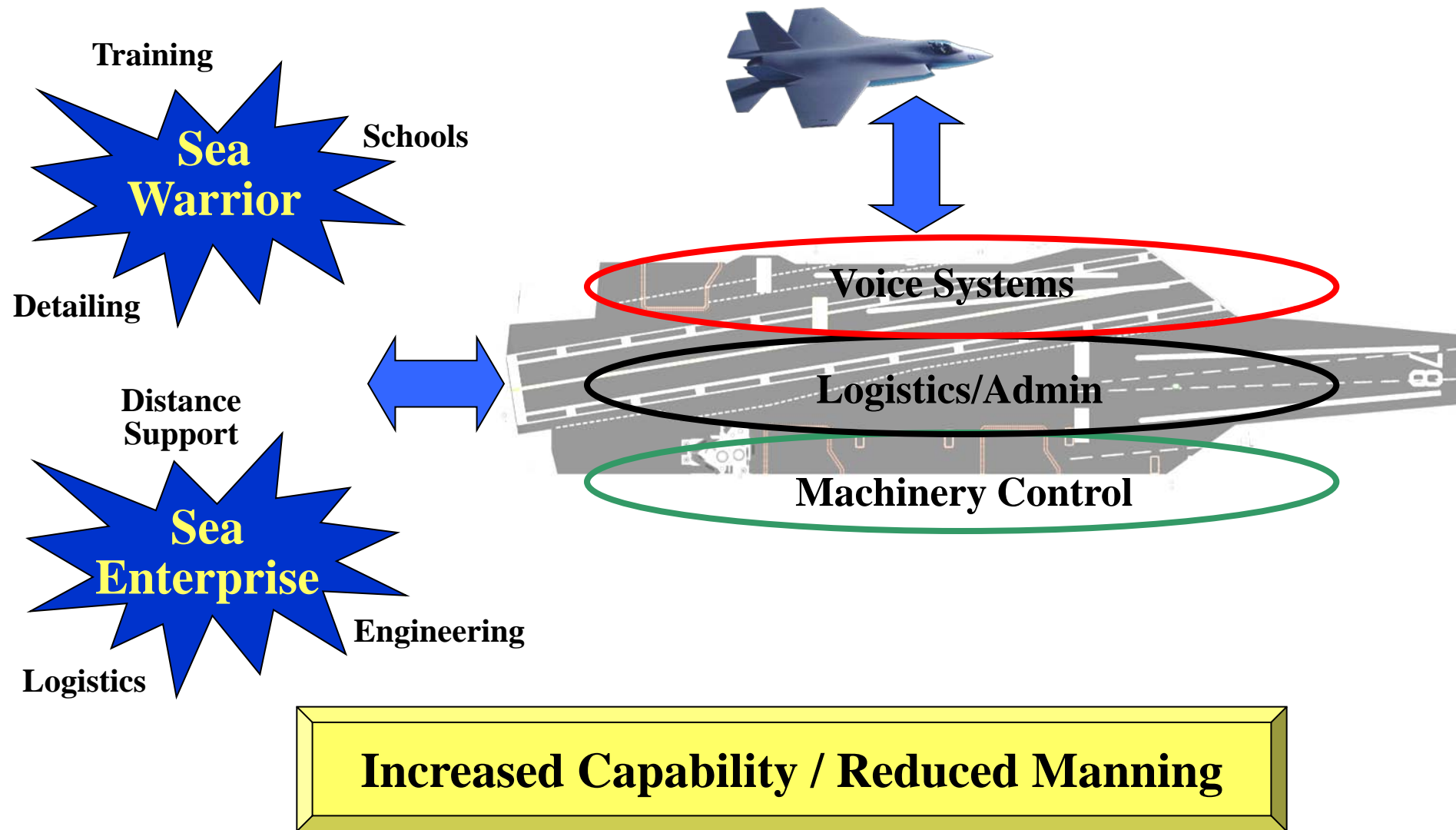
- Voice communication and digital transmission of targeting information

- Data links directly to aircraft mission system & reprograms weapons
- Video, Voice and Data transmissions to PILOT





# *Running the City*



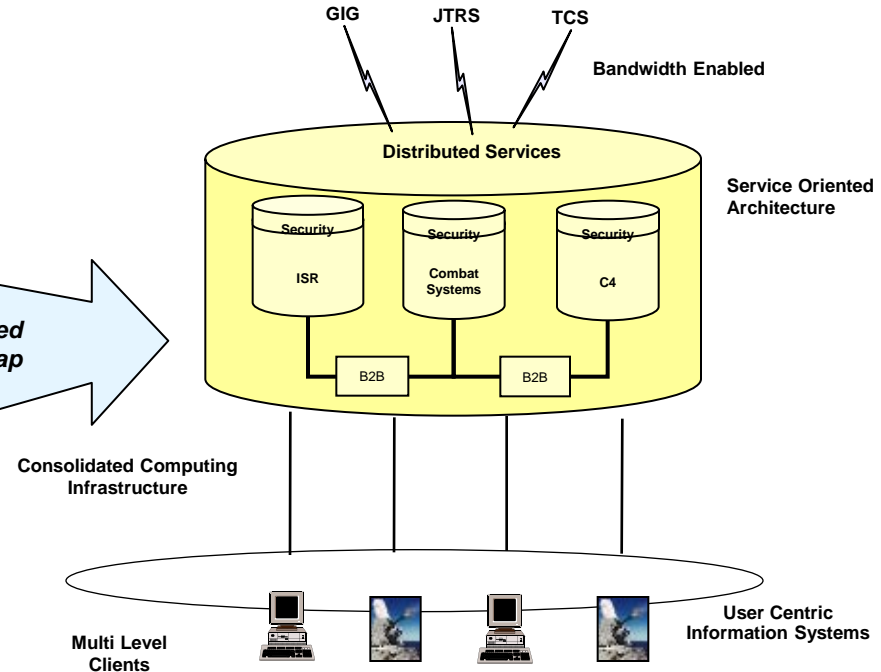


# A Challenge for FORCEnet Acquisition

## NCW Objectives

- Remove Bandwidth as a Capability Limit
- Multi-path Transport & Redundant Paths
- Capability on Demand
- Distributed Operations
- Customized Applications
- Multi-User Access
- Customized Delivery
- Assured Sharing
- Information Provided to Operator is Relevant, Timely,
- Accurate, and Usable

*Integrated  
Roadmap*



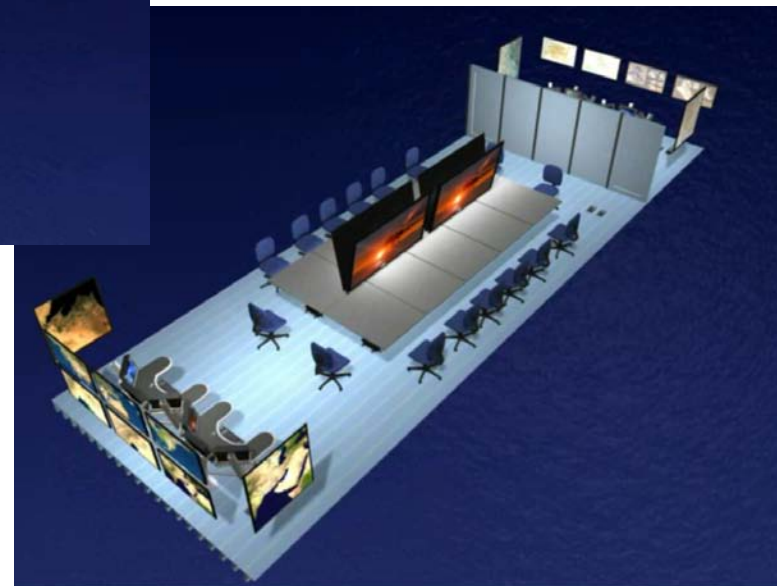
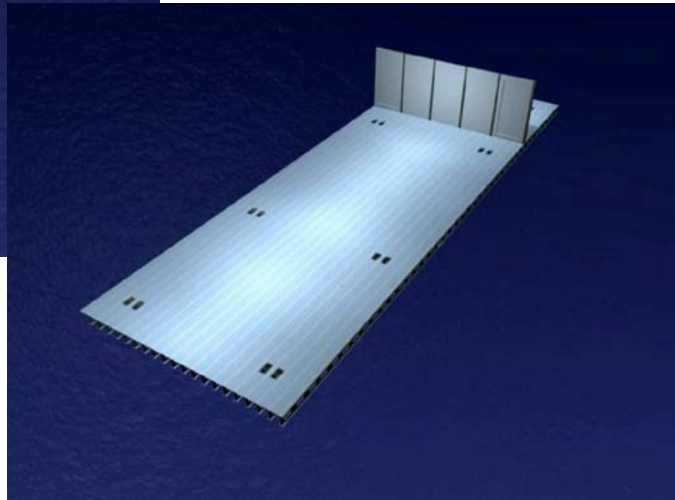
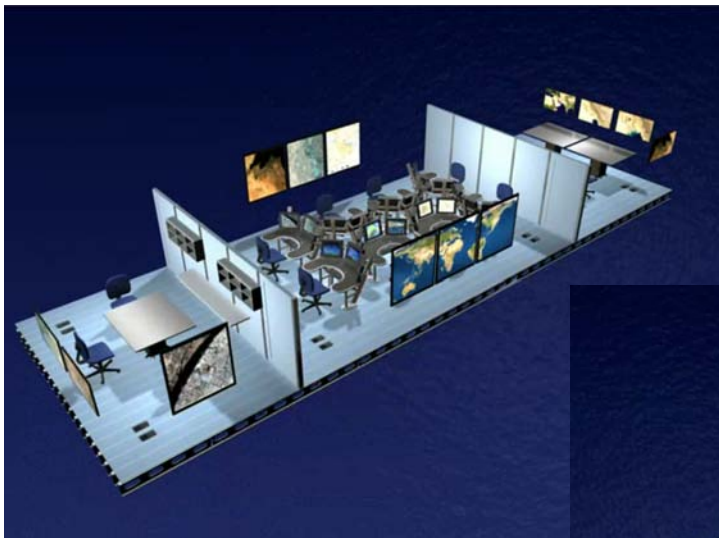
- **Tailorable Mission Packages**
- **True Plug-n-Play Capabilities**
- **One Watchstation, Multiple Domains**





# *Physical Reconfigurability*

## Design for Human Systems Integration

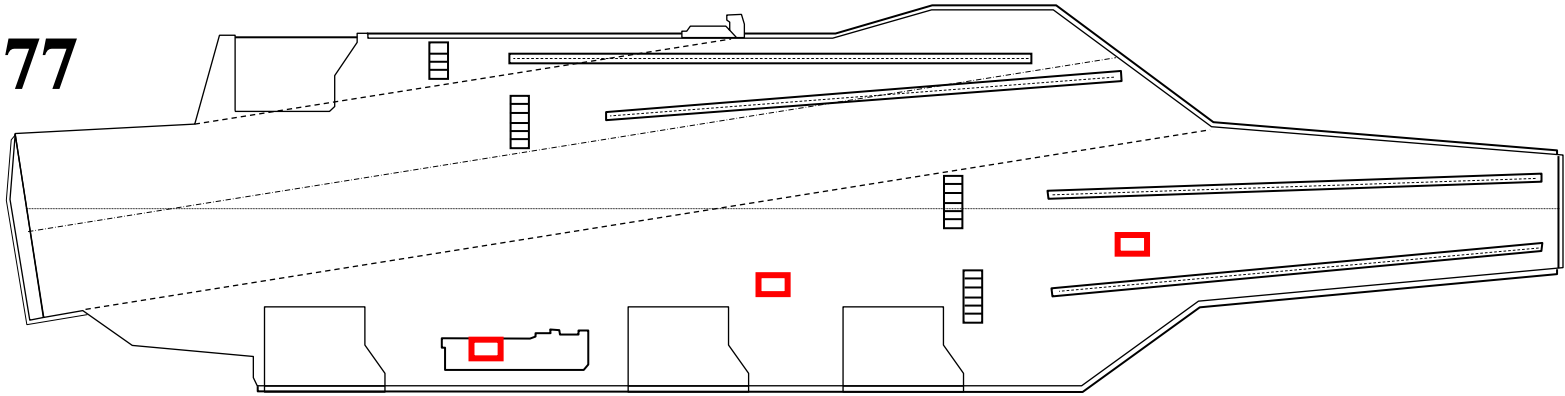




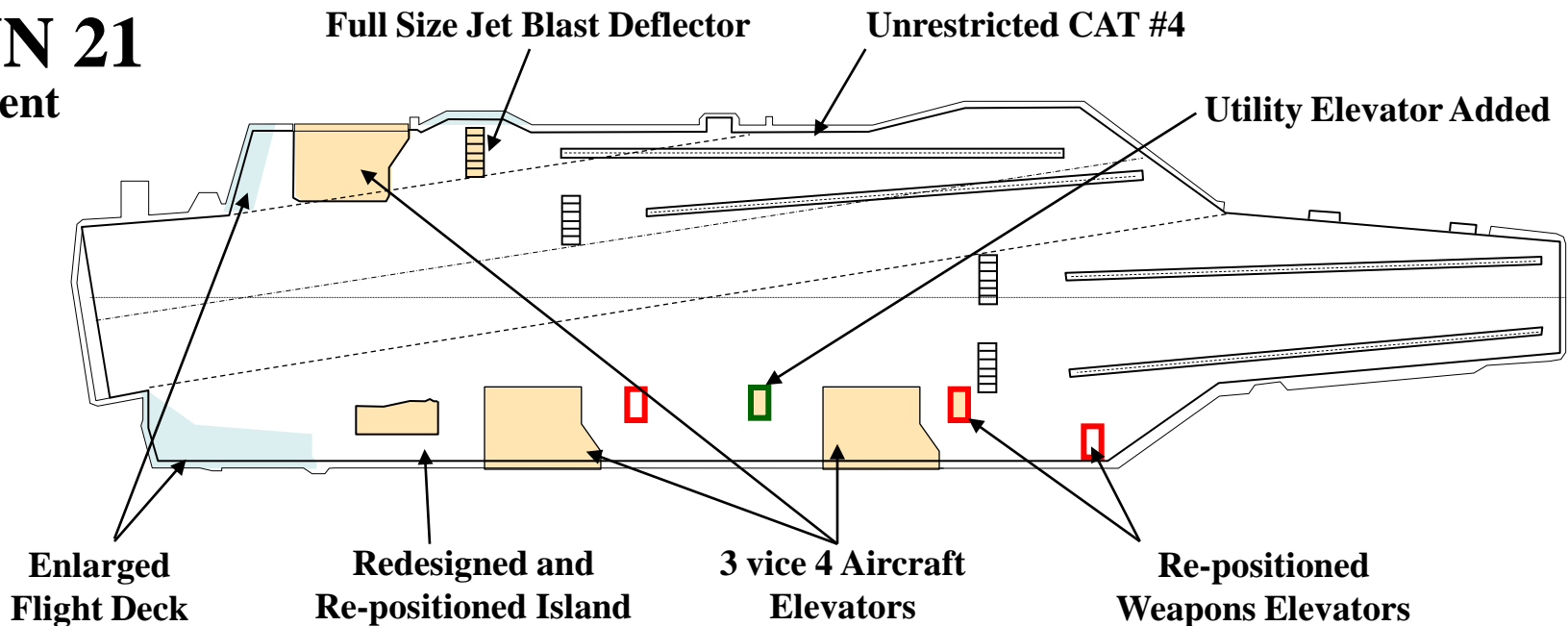
# CVN 21 Concept Ship Flight Deck

UNCLASSIFIED

CVN 77



CVN 21  
Current



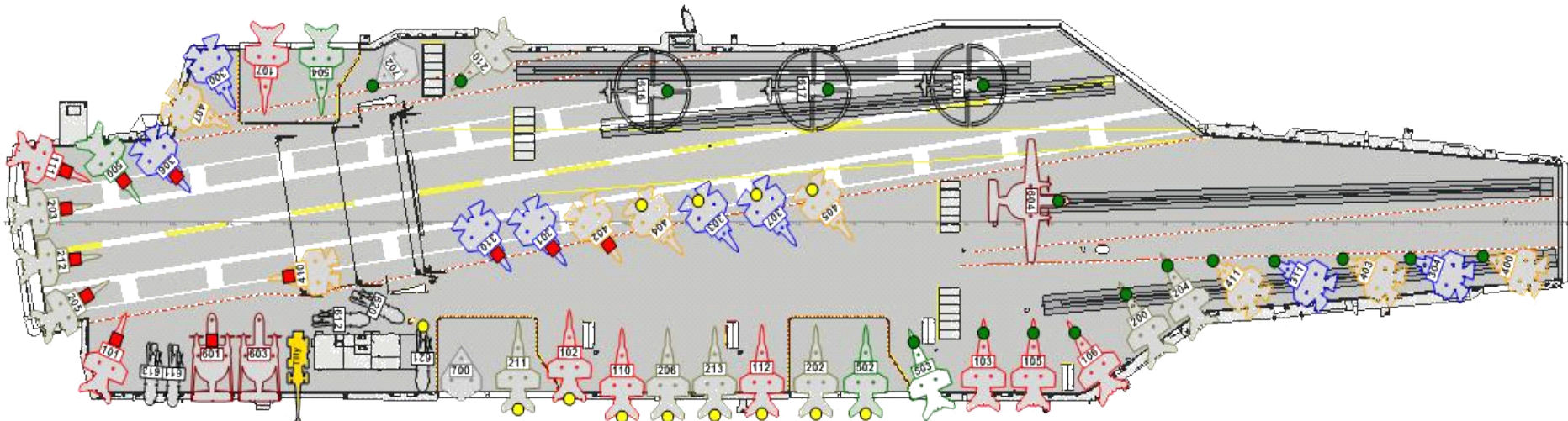


# CVN 21 Concept Ship Flight Deck

## CVN 21 Design Integration in Progress

**Aircraft Spotting, Weapons  
Movement, and Fuel Rates  
Being Modeled**

**Applying DRM to Flight  
Deck Configuration**



**Island Line of Sight and  
"Shadow Zone"  
Assessment**

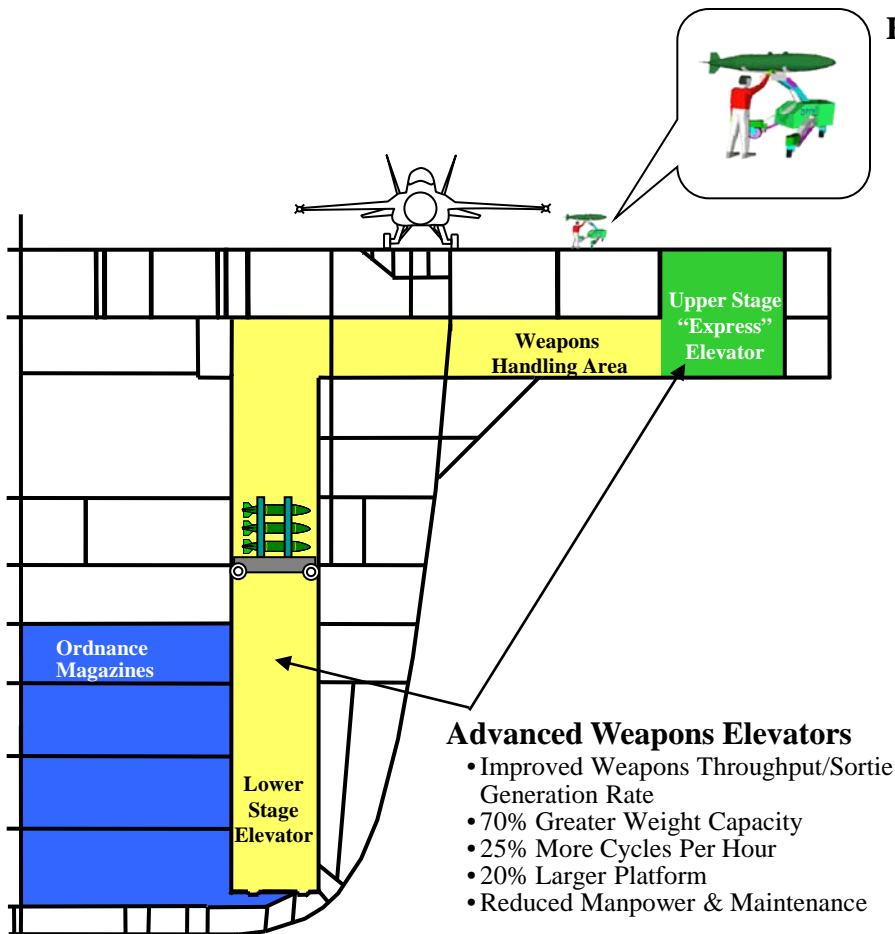
**Sortie Generation Rate  
KPP Evaluation Underway**

**Pit Stop Location  
Optimization Studies**





# Improved Weapons Handling

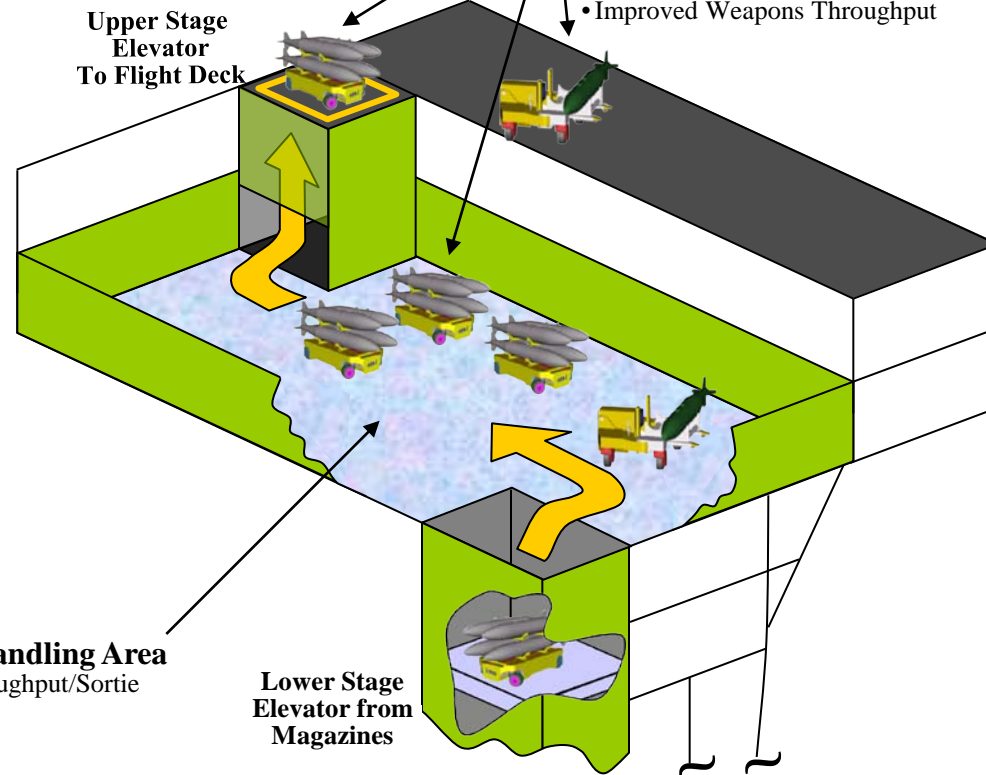


## Human Amplification Technology

- Improved Weapons Throughput/Sortie Generation Rate
- Reduced Manpower

## New Weapons Transporters & Omni-Directional Vehicles

- Reduced Manning
- Increased Maneuverability in Tight Spaces
- Improved Weapons Throughput





# *Take Aways*

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- **CVN 21 Design is a series of Systems Engineering trade-offs.**
- **Moving CVN 21 island started Flight Deck chain.**
- **Cascading Warfare Centers for FORCEnet started C4I chain.**
- **CVN 21 Mission Systems with FORCEnet will Drive a entire Navy Architecture**
- **In-Service Fleet Must Leverage CVN 21 Mission Capability**